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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/811,920 | 03/30/2004 | Hongyong Zhang | 07977-103003 | 3167 |
| 26171 | 7590 | 06/21/2006 | EXAMINER | |
| FISH & RICHARDSON P.C. P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022 | | | QI, ZHI QIANG | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2871 | |

DATE MAILED: 06/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/811,920 | Applicant(s) ZHANG, HONGYONG | |
| | Examiner Mike Qi | Art Unit 2871 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 24-33 and 41-50 is/are pending in the application.
- 4a) Of the above claim(s) 34-40 and 51-72 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 24-33 and 41-50 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 08/768,066.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>1/10/06; 1/17/06; 1/24/06</u> ; | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on Jan.10, 2006 has been entered.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 24, 29, 41 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant admitted prior art (AAPA) in view of US 5,757,450 (Fujii et al).

Regarding claims 24, 29, 41 and 46, AAPA discloses (paragraphs 0004 – 0014;

Fig. 17) that a display device comprises:

- first substrate (element substrate 11) having side edges;
- first conductive lines (scanning lines 16) over the first substrate (11) in a first direction (X direction);

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- second conductive lines (signal lines 15) over the first substrate (11) in a second direction (Y direction);
- using interlayer insulating film for separating the scanning line and the signal line (see paragraph 0014), i.e., an interlayer insulating film disposed between the first conductive lines and the second conductive lines;
- using TFT (see paragraphs 0005-008) to control the liquid crystal display that is connected to the signal line and scanning line, and that is disposed at location adjacent to intersection of the first conductive lines and the second conductive lines;
- the liquid crystal material is interposed between the two substrates, so that the second substrate located separated from the first substrate (11);
- sealing member (17) disposed at a periphery of the first and second substrates, and the sealing member (17) having a portion adjacent to the side edge;

(concerning claims 41 and 46)

- driver circuit (signal line drive circuit 13 and scanning line drive circuit 14 that must have thin film transistors) formed over the first substrate (11) and disposed within a region surrounded by the sealing member (17).

AAPA does not explicitly disclose that: 1) a conductive layer comprising a same material as the second conductive lines or a same material as the scanning lines, and interposed between a portion of the sealing member and the first substrate; and 2) the conductive layer continuously extends along the side edge of the first substrate for more

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than a pitch of adjacent ones of the second conductive line or a pitch of adjacent ones of the scanning lines.

Fujii teaches (col.6, lines 31- 68 and col.12, lines 54-68; Fig.1) that a wiring arrangement on the electrode substrate in which the inclined wirings (42-1 to 42-8) as a conductive layer having a same material as the display electrode (40-1 to 40-8) (Note: such arrangement also be applied to an active matrix liquid crystal display and the display electrodes of Fig.1 are scanning signal lines, i.e., the horizontal gate signal lines or the vertical video signal lines) (see col.12, lines 54-68). Therefore, such conductive layer (42-1 to 42-8) having a same material as the scanning lines or the data lines as shown in Fig.1; and interposed between a portion of the sealing member (36) and the substrate (electrode substrate); and such conductive layer (41-1 to 41-8) continuously extends along the side edge of the substrate for more than a pitch of adjacent ones of the scanning lines or a pitch of adjacent ones of the data lines (40-1 to 40-8) (because the display electrodes 40-1 to 40-8 also can be scanning lines or data lines) as shown in Fig.1. Fujii indicates (col.4, lines 20-23) that such wiring arrangement has a high area utilization efficiency.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the display device of AAPA with the teachings of using a conductive layer formed between the substrate and the sealing member and using same material as the signal lines or scanning lines and extends along the side edge of the substrate for more than a pitch of adjacent ones of the scanning lines or the data

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lines as taught by Fujii, since the skilled in the art would be motivated for achieving a high area utilization efficiency (col.4, lines 20-23).

3. Claims 25, 30, 42 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA and Fujii as applied to claims 24, 29, 41 and 46 above, and further in view of US 5,429,962 (Yang).

Regarding claims 25, 30, 42 and 47, AAPA and Fujii teach the invention set forth above except for that the thin film transistor is a top-gate type thin film transistor.

Yang teaches (col.1, lines 36 – 38) that the top-gate type TFT is a conventional switching element structure. Yang indicates (col.4, lines 33 – 36) that the top-gate type liquid crystal display shows advantages such as the reduction of contact resistance and facile control of the contact resistance.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the display device of AAPA and Fujii with the teachings of using top-gate type thin film transistor in the display device as taught by Yang, since the skilled in the art would be motivated for achieving the advantages such as the reduction of contact resistance and facile control of the contact resistance.

4. Claims 26, 31, 43 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA and Fujii as applied to claims 24, 29, 41 and 46 above, and further in view of US 5,508,532 (Teramoto).

Regarding claims 26, 31, 43 and 48, AAPA and Fujii teach the invention set forth above except for that each channel region of each of the thin film transistors has a crystalline structure.

Teramoto teaches (col.1, lines 21-23) that it is desirable to utilize a crystalline silicon film as an active layer of the TFT so as to obtain excellent operating characteristics.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the display device of AAPA and Fujii with the teachings of the channel region of the TFTs having a crystalline structure as taught by Taramoto, since the skilled in the art would be motivated for obtaining an excellent operating characteristics.

5. Claims 27, 32, 44 and 49 rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA and Fujii as applied to claims 24, 29, 41 and 46 above, and further in view of US 5,619,358 (Tanaka et al).

Regarding claims 27, 32, 44 and 49, AAPA and Fujii teach the invention set forth above except for that the conductive layer is electrically isolated from the first conductive lines (such as the scanning lines) or the second conductive lines (such as data signal lines).

Tanaka teaches (col.11, lines 29-35; Fig.1) that the conductive film (26) is isolated from conductive lines (not electrically connected to signal lines), so as to prevent the corrosion invading into the electrodes.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the display device of AAPA and Fujii with the teachings of the conductive layer electrically isolated from the scanning lines or the data signal lines

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as taught by Tanaka, since the skilled in the art would be motivated for preventing the corrosion of the electrodes (see col.11, lines 29-35).

6. Claims 28, 33, 45 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA and Fujii as applied to claims 24, 29, 41, and 46 above, and further in view of US 5,162,901 (Shimada et al).

Claims 28, 33, 45 and 50, AAPA and Fujii teach the invention set forth above except for that the conductive layer extends in a form of a rectangular wave.

Shimada teaches (col.9, lines 25 – 54; Fig.7) that the conductive film extending form such as the added capacitance electrode wire (2) (conductive layer) having a rectangular wave shape for the extending, and such extending form would increase the contact area to the other layer such as the wire (6) with no breaks. Therefore, such extending form used in the conductive layer of this application would be an obvious variation for increasing the contact area and the layers contact stress, and more easier to keep the cell gap uniform.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the display device of AAPA and Fujii with the teachings of the conductive layer extended in a form of a rectangular wave as Taught by Shimada, since the skilled in the art would be motivated for increasing the contact area and layers contact stress.

Response to Arguments

7. Applicant's arguments with respect to claims 24-33 and 41-50 have been

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considered but are moot in view of the new ground(s) of rejection. The prior art of record such as the reference Fujii shows (col.6, lines 31- 68 and col.12, lines 54-68; Fig.1) that a wiring arrangement on the electrode substrate in which the inclined wirings (42-1 to 42-8) is a conductive layer between the sealing member (36) and the electrode substrate as set forth above.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (571) 272-2299.

The examiner can normally be reached on M-T 8:00 am-5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Mike Qi

Mike Qi
Patent examiner
June 9, 2006